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ABSTRACT

A large-scale study was designed to assess the extent of emctional disturbance among Head Start children and to provide a consistent basis for selection if therapeutic intervention were indicated. The study's aim was to avoid the problem of shifting baselines by individual teachers for determining the degree to which their children were departing from normalcy and the tolerance limits they were willing to accept before assigning a child to therapeutic treatment. A total of 413 children were tested using Kohn's Behavior Checklist and Competence Scale to assess their overt functioning in group settings. The study seems to support the usefulness of this instrument and procedure for identifying, at an early age, children who are later likely to have severe problems. The question of whether therapeutic intervention with this population can have an appreciable impact on changing this prediction was the subject of a subsequent study. An examiner's manual for the Behavior Checklist and Competence Scale is included in this report. (LH)

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Identification of Preschool Children with Emotional Problems

Carolyn Stern, Susan Nummedal, and Sandra Frith

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Problem

Of all the components of comprehensive child care specified in the Head Start guidelines, mental health and psychological services have been most frequently neglected. This is true in spite of the fact that the Joint Commission on Mental Health of Children (1970), reporting only on the school-age population, noted that close to a million and a half children in the United States were suffering from severe mental problems. In addition, 10 to 12 percent of those enrolled in the elementary school had demonstrated intermittent but persistent emotional disturbances. Although comparable statistics for preschool children are extremely difficult to obtain, there is certainly no rational or scientific basis to assume that young children, especially those from disadvantaged, poverty families, do not have their fair share of mental problems.

Neglecting the needs in this important health area is exceedingly costly. According to the report of the President's Task Force (1970), expenditures for mental health care alone are over 20 billion dollars a year. This does not include the financial burden placed on the courts and criminal institutions by destructive aberrant behavior, nor does it in any way count the cost in loss of productivity, let alone human lives. This situation is particularly tragic since there is general agreement, even among widely disparate theoretical orientations, that the etiology of mental illness is rooted in the early years of childhood. More tragic still is the fact that, whereas deviant behavior patterns of adolescents and adults are extremely difficult to modify, young children respond quite readily to appropriate intervention procedures.

While there are many reasons why this important component of health care for Head Start children has received scant attention, a major factor is the insufficient number of available personnel with traditional professional qualifications. Several innovative programs have been designed to provide alternative approaches to serving the needs of these children. A program for the training of preschool teachers to work with emotionally disturbed children was established by the National Institutes of Mental Health in 1965, with grants awarded to Tufts University, Wheelock College, University of Michigan, and Cedar-Sinai Medical Center in Los Angeles. Since his appointment as

Director of Psychological Services in the Office of Child Development, Dr. Paul Wohlford (cf. Wohlford, 1972) has attempted to focus attention on this critical area, and to upgrade services by integrating and coordinating other public and private agencies with capacity to augment the resources of budgetarily limited Head Start programs.

Recently Stern, Nummedal, & Brussell (1972) completed a research study comparing the effectiveness of three procedures for working with disturbed Head Start children. The unevenness and unreliability of teacher identification of eligible children for this study pointed up the need for a selection instrument which would provide an objective and reliable method for describing the significant symptomology.

The lack of measures for use with preschool children is a presisting problem in early childhood education. Difficult as it may be to design tests of cognitive functioning for use at this age, a far more challenging area of assessment is that concerned with affective behaviors. Particularly is there a dearth of non-projective diagnostic devices on which to base psychological and educational decisions. Fortunately, an early version of the Kohn (1968) Behavior Checklist[1] and Competence Scale was made available to the project. The literature on which the theoretical rationale is based and the details of the development of the final measure are presented in a recent article (Kohn & Rosman, 1972a). For the convenience of the reader of the present study, it should be noted that the most relevant references cited include Baumrind (1971), Biber (1958), Chance (1959), Digman (1963), Jahoda (1958), Lorr, Klett & McNair (1963), Peterson (1961 and 1963), Schaefer (1961), Schaefer & Aaronson (1966), and Walker (1967).

The factor structure of the two associated scales was examined in terms of congruence with factors on similar measures (e.g. those of Schaefer and Peterson), and there is substantial basis for accepting the generality of the constructs. Further exploratory work with the Kohn instrument was concerned with the persistence of the factor structures over time, both within day care and from day care to elementary school. The authors conclude that: "The predictions...about the persistence of personality trends are well supported by the findings..." (p.441).

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[1] In his work, Kohn has interchangeably used "Problem," "Symptom," and "Behavior" to describe the Checklist; the latter term is used in this paper.

A second study by the same authors (Kohn & Rosman, 1972b) provides evidence of the usefulness of the instrument for relating social-emotional functioning in the preschool to later intellectual achievement. The congruence, stability, and predictive power of the measure thus justified its adoption as the screening device for the Stern, et al. study.

Description of the Instrument:

Kohn's Behavior Checklist and Competence Scale was designed to assess the overt functioning of children in group settings. The first part, the Behavior Checklist, includes items which are generally recognized as clinical symptoms of disturbance, but which may be manifested by children enrolled in a regular school. The second part of the instrument, the Competence Scale, contains items which focus on the child's mastery of the major areas of social competence in the preschool, including the quality and quantity of child-teacher interactions, peer interactions, and autonomous involvement in activities. Items on this scale cover various degrees of both unhealthy as well as healthy functioning.

In the previous study using the Kohn instrument (Stern, et al, 1972), a number of changes were made to be more responsive to conditions in the local Head Start programs. Further adaptations were made for the present investigation. The Stern-Nummedal modification of the Kohn instrument excluded items which were redundant (i.e., the same concept presented in several ways), not behaviorally-defined, or not applicable to the Head Start situation (for example, the average three-hour Head Start day does not usually include nap periods). Items were combined where it was felt that there were no behavioral distinctions to be made. Additional items were generated when a single existing item contained reference to behaviors which would not necessarily co-occur, or when behaviors deemed significant and applicable to the Head Start situation had not been included. With these excisions and additions the 32-item Behavior Checklist was increased to 38 items, and the Competence Scale was reduced from 75 to 54 items. The three-point rating scale for items on the Behavior Checklist was retained but the names given to the points on the scale were altered to read (1) Not at all typical, (2) Somewhat typical, and (3) Very typical. For the Competence Scale, the original seven point rating scale was collapsed into a five point scale: (1) Always, (2) Often, (3) Sometimes, (4) Rarely, and (5) Never. Kohn's original summary items for children's

overall functioning and verbal fluency were retained, but with a different format. The physical layout of the protocol was modified so as to facilitate the ease with which it could be used both by the observers and later by the data reduction staff.

Kohn's factor analytic findings indicated the existence of two factors for each part of the instrument. For the Behavior Checklist, Factor 1 consisted of items measuring apathy and withdrawal, and Factor 2 was made up of items measuring anger and defiance. For the Competence Scale, Factor 1 contained items measuring interest-participation vs. apathy-withdrawal and Factor 2 consisted of items measuring cooperation-compliance vs.anger-defiance. The correlation between Checklist and Competence Scale for Factor 1 and 2 were .75 and .79 respectively.

In their work, Kohn and Rosman have relied completely on ratings provided by the children's own teachers, and this procedure was followed in the selection of disturbed children for the first therapeutic intervention study (Stern, et al, 1972). The teachers were asked to identify children for both the experimental treatment as well as the normal control group. Although the teacher's ratings were used as the basis for selection, observations were also made by the paraprofessional aides prior to inititation of the intervention and immediately after treatment had been terminated.

The analysis of the data revealed that individual teachers had quite different baselines for determining the degree to which their children were departing from normalcy, and the tolerance limits they were willing to accept before assigning a child to the therapeutic treatment. Some of the children in the normal control group were described by the objective observers as demonstrating more aberrant behavior than children in the disturbed groups in another teacher's class.

To avoid the problem of shifting baselines, and to establish a more accurate picture of the expected range of behaviors, a large scale study was designed to assess the extent of emotional disturbance among Head Start children and to provide a consistent basis for selection if therapeutic intervention were indicated.

Method

The Study Population. A total of 413 children in 32 classrooms in 15 individual Head Start sites under 4 delegate agency auspices were tested.

Table 1 depicts the distribution by sex, race, and age for each agency. Agency 1 is represented by just 1 site and therefore has relatively fewer cases than the others. Agencies 2, 3, and 4 have 5, 4, and 4 sites each, respectively. In general there were an approximately equal number of boys and girls. The majority of the children were between 48 and 59 months of age, and the ethnic breakdown indicates that Blacks made up 80%, Mexican Americans 13.8%, and Caucasian-Others 6.2% of the groups. This distribution is representative of the general Head Start population in the Los Angeles area.

Procedure

Training. Prior to embarking on the actual observation phase, a rigorous training program was carried out with the observers. The individuals selected for this task all met the prerequisite of at least one year's experience testing and/or observing preschool children. Eight observers participated in a total of four half-day training sessions. On the first day an overview of the project was provided, with general guidelines for on-site behavior. The protocols for the Behavior Checklist and Competence Scale were then distributed and each item discussed in detail, with both positive and negative instances of the types of behavior covered by the particular item.

The second day gave the trainees the opportunity to apply the instrument to videotaped records of a variety of Head Start classroom situations. These tapes had been made during the therapy study already cited (Stern, et al., 1972) and provided excellent illustrations of both normal and disturbed behavior. For the third day, practice observation of children in Head Start classes had been arranged and the observers spent two of the four hours out in the field observing structured and free play situations.

Then they returned to the office for further discussion and clarification. On the fourth day pairs of observers were assigned to filling out protocols on the same children. Only after achieving reliability were the observers allowed to begin rating the children in the study population.

Observation. Each observer spent four days in a classroom of approximately 15 children. The first day's observation was rather global, allowing the observer to learn the names of the children and become familiar with the classroom records and schedules. During the second, third, and fourth days, children were observed individually, first in five minute intervals and then

PS 006083

Table 1. Demographic Description of Study Sample.

Agency	Age	Black M	Black F	Mexican American M	Mexican American F	Caucasian-Other M	Caucasian-Other F	Total M	Total F	Total
1	3	0	0	1	0	1	0	2	0	2
(N=28)	4	8	6	5	6	0	1	13	13	26
	5	0	0	0	0	0	0	0	0	0
2	3	16	17	0	1	0	2	16	20	36
(N=159)	4	56	52	6	1	4	2	66	55	121
	5	1	1	0	0	0	0	1	1	2
3	3	15	10	1	0	0	1	16	11	27
(N=106)	4	38	39	0	0	0	0	38	39	77
	5	1	1	0	0	0	0	1	1	2
4	3	6	3	4	4	4	0	14	7	21
(N=120)	4	32	26	14	13	5	6	51	45	96
	5	2	0	0	1	0	0	2	1	3
Total	3	37	30	6	5	5	3	48	38	86
(N=413)	4	134	123	25	20	9	9	168	152	320
	5	4	2	0	1	0	0	4	3	7
Total		175	155	31	26	14	12	220	193	413

in groups. The frequency of occurrence of behaviors listed on the screening instrument were recorded on a special Daily Record Sheet.[1] At the end of the fourth day of observation the Behavior Checklist and Competence Scale was completed for each child in the class. Teachers were also asked to fill out the instrument for the individual children.

Reliability

A major question in all observation studies is the degree of reliability of the data. In the present study two types of reliability were obtained: 1) Observer-Teacher and 2) Observer-Observer. For the first reliability estimate, the ratings of eight observers and 32 teachers of the 413 children on each of the variables as well as the overall ratings were compared. These are presented in Table 2. Although only moderate in size, all of the r's are significant at above the.01 level of significance. It should be noted that, as

Table 2. Teacher-Observer Agreement on Rating Scales.

Factor	B.C. 1	B.C. 2	C.S. 1	C.S. 2	Total 1	Total 2	Overall Ratings
	.53	.60	.35	.48	.43	.52	.29

Note: All correlations are significant at the $p < .01$ level.
Number of Children Observed: 413; Number of Observers: 8; Number of Teachers: 32.

expected, the least reliable rating was that of the overall impression of the child's behavior. It is a curious fact that teachers who make many astute observations on specific behaviors will tend to give average or near-average ratings on a global basis.

Tests of reliability of observation instruments are exceedingly vulnerable since it is difficult to insure that the two observers are attending to precisely the same events at the same time. To maximize the precision of the

[1] Copies of all instruments used in the study are presented in Appendix A.

reliability estimate, the observers in the present study were given the list of precise problem-behaviors for the specific children to be observed and asked to record the frequency of their occurrence within limited segments of time. Table 3 presents the data from this inter-observer reliability test. As can be seen from this table, they demonstrate uniformly and acceptably high correlations.

Table 3. Estimates of Inter-Observer Reliability

Observer Pairs	1	2	3	4	5	6
Number of Children Observed	19	30	35	16	58	22
r	0.94**	0.81**	0.80**	0.99**	0.98**	0.99**

**p <.01

Scoring the Behavior Checklist and Competence Scale.

In identifying disturbed children from the data obtained with the observation measures, Kohn (1968) has recommended the simplified procedure of pooling the corresponding factor scores from the Checklist and the Competence Scale. However, the unequal number of items in the two scales, with fewer in the Checklist which is considered to be the more clinically oriented of the two, made the use of raw scores inappropriate. Thus the four raw score distributions were converted to Z scores.[1] All the analyses presented are in terms of these standardized scores.

Results

In Table 4 are presented, by site, the means and standard deviations for both factors of the Behavior Checklist and the Competence Scale, as well as the total factor scores. To determine whether there were any significant differences on these variables as a function of Delegate Agency affiliation, a one-way analysis of variance was run separately for each of the individual factors and for the combined factor scores. The results of this analysis, shown in Table 5, revealed no statistically significant differences among agencies on five of the six variables. However, for Factor 2 of the Checklist,

[1] These conversion tables are presented in Appendix B.

which measures the extent of clinically defined aggressive, acting-out behavior, there were significant differences among the three agencies. The Newman-Keuls post hoc test confirmed that the frequency of this type of behavior was significantly greater in Agency 4 compared to Agency 3, and in Agency 3 compared to Agency 2.

The next analysis (see Table 6), comparing the 14 sites independent of agency, indicated significant differences on all but the Total Factor 1 scores. Again, Newman-Keuls analyses were performed to identify the source of differences on each of the dependent measures. These tables are presented in detail in Appendix B. For the Competence Scale, only the sites at the two extremes of the distribution, both from different agencies, were significantly different from each other on Factor 1, with no other site showing meaningful differences on the Apathy-Withdrawal dimension. A similar finding for the corresponding factor on the Checklist showed only two sites at the upper extreme as significantly different from the one site at the lower end of the distribution. All three of these sites were in different agencies.

There were more and larger between-site differences for Factor 2 on both the Checklist and the Competence Scale. However, on the Checklist these all related to site 4, which was significantly different from six other sites; three of these were from a single (different) agency, and one from the same agency. On the Competence Scale, there were Factor 2 differences involving four of the same six sites. These data indicate that the bases of the site differences could not be attributed to differences in the child development concepts or mental health orientation which a particular agency might favor.

Table 4. Means and Standard Deviations for Factor 1 and Factor 2 Scores (by Site).

Site	N		Factor 1 B.C.	Factor 2 B.C.	Factor 1 C.S.	Factor 2 C.S.	Factor 1 Total	Factor 2 Total
1	28	Mean	-0.49	0.05	0.62	-0.38	1.11	-0.33
		S.D.	1.47	1.15	1.29	1.01	2.63	2.08
2	56	Mean	-0.21	-0.17	0.03	-0.54	-0.18	-0.70
		S.D.	0.82	0.67	1.10	0.82	1.85	1.44
3	20	Mean	0.43	-0.19	0.43	-0.54	0.85	-0.72
		S.D.	1.43	0.89	1.34	0.82	2.67	1.61
4	28	Mean	-0.07	0.58	0.48	-0.21	0.41	0.79
		S.D.	0.80	1.48	0.92	1.07	1.57	2.50
5	30	Mean	0.50	0.38	0.27	0.09	0.76	0.48
		S.D.	1.28	1.47	1.33	1.67	2.52	3.09
6	25	Mean	-0.03	-0.48	-0.11	-0.94	-0.14	-1.41
		S.D.	1.22	0.43	1.35	0.48	2.54	0.85
7	29	Mean	-0.47	-0.29	-0.16	-0.66	-0.62	-0.94
		S.D.	0.50	0.84	0.81	0.80	1.16	1.56
8	29	Mean	-0.04	0.00	-0.28	-0.53	-0.32	-0.53
		S.D.	0.94	0.63	0.95	0.67	1.81	1.20
9	25	Mean	0.34	0.00	0.46	-0.03	0.79	-0.02
		S.D.	1.37	0.87	1.20	0.92	2.45	1.70
10	23	Mean	0.18	-0.36	0.12	-0.44	0.30	-0.80
		S.D.	1.20	0.47	0.94	0.63	2.11	1.05
11	50	Mean	-0.15	-0.42	0.08	-0.56	-0.07	-0.97
		S.D.	0.71	0.40	0.90	0.70	1.47	1.04
12	20	Mean	0.02	-0.46	0.16	-0.53	0.18	-0.98
		S.D.	0.82	0.45	1.02	0.69	1.73	1.09
13	21	Mean	-0.13	-0.24	0.50	-0.07	0.38	-0.31
		S.D.	0.84	1.13	1.42	1.21	2.14	2.28
14	29	Mean	-0.24	0.00	0.51	-0.27	0.27	-0.27
		S.D.	0.79	1.69	1.33	1.04	2.04	2.58

Note— Site 1= Agency 1; Sites 2,3,4,5,6 = Agency 2; Sites 7,8,9,10 = Agency 3; Sites 11,12,13,14 = Agency 4.

Table 5. Analysis of Variance for Factor 1 and Factor 2 Scores, with Agency as Source of Variance.

Variable	Agency	Mean	S.D.	MS	df	F
Factor 1, B.C.	2	0.06	1.10	1.29	2	1.30
	3	-0.02	1.06			
	4	-0.14	0.77			
Factor 2, B.C.	2	0.01	1.09	3.29	2	3.44*
	3	-0.16	0.73			
	4	-0.29	1.01			
Factor 1, C.S.	2	0.18	1.20	1.92	2	1.51
	3	0.01	1.01			
	4	0.27	1.13			
Factor 2, C.S.	2	-0.35	1.11	0.21	2	0.23
	3	0.43	0.79			
	4	-0.40	0.90			
Total Factor 1	2	0.24	2.19	1.88	2	0.47
	3	-0.01	1.96			
	4	0.13	1.78			
Total Factor 2	2	-0.33	2.13	4.67	2	1.36
	3	-0.58	1.43			
	4	-0.69	1.79			

*$p \leq .05$

Table 6. Analysis of Variance for Factor 1 and Factor 2 Scores, with Site as Source of Variance.

Variable	df	MS	F
Factor 1, B.C.	13	2.58	2.49*
Factor 2, B.C.	13	2.77	2.97*
Factor 1, C.S.	13	2.30	1.80*
Factor 2, C.S.	13	2.81	3.23*
Total Factor 1	13	7.25	1.74
Total Factor 2	13	10.13	3.09*

*p < .05

To answer the question of whether particular sites within the same agency differed from one another, additional analyses of variance were computed (see Table 7). It is interesting to note that there are no significant within-site

Table 7. Analysis of Variance for Factor 1 and Factor 2 Scores by Site, Separately for Each Agency.

Variable	Agency 2 (N=159)			Agency 3 (N=106)			Agency 4 (N=120)		
	MS	df	F	MS	df	F	MS	df	F
Factor 1, B.C.	3.31	4	2.89*	3.28	3	3.09*	0.28	3	0.47
Factor 2, B.C.	5.48	4	5.10*	0.93	3	1.77	1.30	3	1.28
Factor 1, C.S.	1.81	4	1.27	2.85	3	2.96*	1.66	3	1.29
Factor 2, C.S.	6.48	4	5.97*	1.97	3	3.37*	1.44	3	1.80
Total Factor 1	7.52	4	.59	10.61	3	2.91*	1.30	3	0.41
Total Factor 2	23.73	4	5.85*	4.23	3	2.31*	4.63	3	1.47

*p< .05

differences at Agency 4. Looking at Table 1, it can be seen that this Agency had a far more heterogeneous ethnic mix than the others; it also had a far smaller percentage of young children: 17.5% compared to 21.5% for the total population. Variations among sites in the other two agencies do not seem to follow any specific pattern. It is quite possible that the obtained differences are merely statistical artifacts, reflecting random population

changes which most teachers have witnessed from class to class and year to year.

Developing the Selection Criteria

Having been satisfied that the observed children were fairly representative of the range generally found in the local Head Start program, the final phase of the study was devoted to establishing appropriate criteria for deciding which children were in need of therapeutic intervention. Because the Behavior Checklist was developed to measure the frequency of aberrant behavior, the distribution was heavily skewed in the positive direction; that is, the majority of the children were clustering in the normal range, with only a small proportion demonstrating highly deviant scores. On the other hand, the Competence Scale, which was designed to assess normal functioning, was expected to yield an approximately normal distribution curve. Finally, the total score, which combined corresponding factors from the two scales, was expected to yield a modified normal distribution with a slightly positive skew. The obtained data followed the anticipated pattern. Table 8 presents the percent of the population falling in the interval whose upper limit is given in the Z score columns.

A similar distribution for Z scores obtained with the Competence Scale is not included for several reasons. Two alternatives for establishing criteria for intervention seemed defensible. First, children could be selected on the basis of scores on the Behavior Checklist alone. This procedure has been recommended by Kohn, since the measure was designed to detect overt symptoms of deviant behavior. The second alternative, also suggested by Kohn, was to combine scores on the two measures. The Z score transformations made it possible to obtain a simple set of scores in which the items of the Checklist would be given appropriate weight. A selection criteria based on the Competence Scale scores alone would be demonstrably inadequate; hence there seemed to be no reason for including a Z score distribution for the Competence Scale.

The major consideration in the selection problem is that of establishing the cut-off score. According to the theory of normally-distributed attributes, on a two-tailed test a Z score of 1.96 or above would identify atypical or deviant children with a 5% level of error. That is, there would be a chance that 5 out of 100 children might be erroneously identified as disturbed. A

Table 8. Distribution of Scores and Cut-Off Criteria for Selection of Subjects. (N=413)

Behavior Checklist				Total Factor Scores (BC + CS)			
Factor 1		Factor 2		Factor 1		Factor 2	
Z-Score	%	Z-Score	%	Z-Score	%	Z-Score	%
-0.83	22.8	-0.67	48.5	-1.48	27.6	-0.96	59.6
-0.68	14.0	-0.47	12.3	-1.22	6.1	-0.61	10.9
-0.53	10.4	-0.27	8.0	-0.96	6.5	-0.27	6.5
-0.38	9.0	-0.07	5.8	-0.70	6.0	0.14	5.3
-0.23	4.9	0.13	4.8	-0.44	6.8	0.48	2.0
-0.08	5.1	0.33	3.9	-0.18	4.9	0.83	1.9
0.07	4.1	0.53	2.4	0.08	5.3	1.17	3.4
0.22	4.6	0.73	2.7	0.35	3.4	1.52	1.2
0.37	4.1	0.93	1.9	0.61	4.6	1.86	1.0
0.51	0.0	1.13	1.0	0.87	2.9	2.20	0.7
0.66	2.9	1.33	1.7	1.13	2.4	2.54	1.2
0.81	0.7	1.53	0.7	1.39	1.9	2.89	0.5
0.96	2.2	1.73	0.2	1.65	3.4	3.23	0.7
1.11	1.9	1.93	0.5	1.91	1.5	3.51	0.5
1.26	1.7	2.13	0.7	2.17	2.4	3.92	0.5
1.41	1.2	2.33	0.7	2.43	1.5	4.26	0.2
1.56	1.7	2.53	0.5	2.69	1.2	4.61	0.2
1.71	0.2	2.73	0.5	2.96	1.2	4.95	0.9
1.86	0.0	2.93	1.0	3.22	0.7	5.29	0.2
2.00	1.2	3.13	0.2	3.48	1.0	5.64	0.9
2.15	2.2	3.33	0.0	3.74	1.2	5.98	1.5
2.30	0.7	3.53	1.0	4.00	2.2		
2.45	0.5	3.73	0.5	4.26	5.3		
2.60	0.7	3.93	↯				
2.75	0.5	↯					
2.90	0.2	4.73	0.3				
3.05	0.7	↯	↯				
3.20	0.2	6.93	0.2				
3.35	0.2						
3.49	0.2						
3.64	0.2						
3.79	0.2						
3.94	0.2						
4.09	0.2						
4.24	0.2						
4.39	0.2						
4.54	0.2						

more rigorous criterion, for example a Z score of 2.58, at the 1% level, would reduce that probability so that only 1 out of 100 children might be incorrectly identified. For the Behavior Checklist, in which aberrancy is computed in only one direction from the mean, a one-tailed test might be considered more appropriate. Thus Z scores of 1.64 and 2.33 would be at the 5% and 1% level of probability, respectively.

It should be remembered, however, that as the chances for selecting inappropriate cases (Type I error) decrease the chances for over-looking appropriate cases (Type II error) increase. In the final analysis, the choice between these two types of error becomes as much a matter of the personality of the investigator as that of the sensitivity of the particular experiment. The probability of error can be reduced if more than one judgment point can be obtained. Hence the alternative of summing the Z scores from the Checklist and Competence Scale for the corresponding factor would offer some increased confidence in the accuracy of the diagnosis. If the Competence Scale is considered a two-tailed test and the Behavior Checklist a one-tailed test, the Z scores at the 5% levels of both tests would provide a combined Z score of 3.60 as the cut-off point. On Table 8 it can be seen that a criterion at the 5% level based on the Checklist alone would characterize 14.3% of the study population as disturbed; with the combined score as cut-off criterion only 13.1% are so identified. If one remembers that Head Start is not compulsory and that most of the severely disturbed preschool age children are <u>not</u> accepted for enrollment, the percentage of disturbed children in the study population seems to be slightly higher than the figure cited for elementary school children in the Joint Commission reports. Evidently many of these children fall out to become part of the close to a million and a half children characterized as suffering from "severe mental problems."

The present study, in addition to the work of Kohn & Rosman, seems to support the usefulness of this instrument and procedure for identifying, at an early age, children who are likely to become much more severe problems later on. The question of whether therapeutic intervention with this population can have an appreciable impact on changing this prediction was the subject of the subsequent study.

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Appendix A: Stern-Nummedal Adaptation of the Kohn Behavior Checklist and Competence Scale.

Manual

Record Sheets

Coding Sheet

Daily Record Sheets

Summary Data Sheet

UCLA EARLY CHILDHOOD RESEARCH CENTER
1970-1971

EXAMINER'S MANUAL
FOR
BEHAVIOR CHECKLIST AND COMPETENCE SCALE[1]

The Behavior Checklist and the Competence Scale have been designed to measure problem behaviors as well as the degree of mastery the three- to five-year-old child demonstrates in the Head Start environment. While it should be borne in mind that all children exhibit some of the behaviors at some point in their development, the items are to be rated in terms of the frequency with which they have been observed during the period in which the child has been in the Head Start class.

The Behavior Checklist consists of 38 behavior items which are to be rated on a three-point scale: 0 = Not at all typical; 1 = Somewhat typical; and 2 = Very typical.

The Competence Scale includes 54 items, each of which is to be rated: 0=Always; 1=Often; 2=Sometimes; 3=Rarely; and 4=Never.

Please be careful that the response checked corresponds with the appropriately numbered item. Items 55-57 are summary evaluations.

RATING INSTRUCTIONS

1. Consider each question independently. It is well known that children may exhibit seemingly contradictory behavior.

2. Base your ratings on how the child functions in Head Start.

3. Some items contain a number of specific behaviors which are only slightly different from each other. Do not hesitate to make a rating even though the child does not exhibit all of the specific behaviors.

4. Answer every item. Do not leave any blanks.

5. Do not hesitate to use the extreme points where appropriate.

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[1]The Behavior Checklist and the Competence Scale have been adapted from Martin Kohn, Competence and symptom factors in the preschool child, William A. White Institute, New York, 1968, by the Head Start Research Center, University of California, Los Angeles, September 1969.

BEHAVIOR CHECKLIST

1. Eats, sucks or drinks inedible substances such as plaster, ink, sand, cloth, wood, toys, etc.
2. Body appears stiff and rigid when standing, sitting, lying down or being held.
3. Has mournful, downcast expression, seems sad.
4. Is listless or apathetic.
5. Moves head or body in a very slow way.
6. Hardly speaks at all.
7. Speaks in a faint or weak voice (not due to known physical causes).
8. Acts overly fearful and cautious..
9. Acts extremely frightened to the point of screaming and crying (disregard where child screams or cries out of anger).
10. Screams or bangs objects, etc., when angry, irritated or frustrated. (Has temper tantrums).
11. Gets easily irritated or bothered by things or by people.
12. Is tense or jittery in everyday situations or activities.
13. Gets angry when interrupted at play by adult as part of normal routine (not punishment).
14. Seeks attention through rowdy or "show-off" behavior.
15. Withdraws or accepts it (does not defend himself) when others shove, hit, accuse or criticize him.
16. Stays close or clings to mother or adult (more than usual for this age level).
17. When working with materials, becomes bothered or upset when he cannot make things "just right" or put them in perfect order.
18. Says he's going to kill himself.
19. Talks about death and killing.
20. "Talks back" to adults in a defiant and fresh manner.

21. Is unresponsive to or resents friendly overtures by adults or children.

22. Maltreats other children, with deliberate cruelty; bullies, hits or picks on other children.

23. Gives excuses for not following classroom procedures or rules of game.

24. Hurts others, tells untruths, or destroys property without seeming to feel badly.

25. Is very much a follower; does not initiate play with other children (fails to start or suggest games or to initiate activities).

26. Swears or curses, using "hell," "damn," or other four-letter words.

27. Occupies himself continuously with one type of activity and resists leaving it to do anything else.

28. Has an aloof and distant manner (keeps to himself).

29. Requires urging to take part in activities.

30. Is shy or bashful and fails to play with most other children.

31. Stares blankly into space without appearing to be looking at or thinking about anything (to the point of being unresponsive to things or to people).

32. Appears bewildered or confused.

33. Is destructive in regard to his own and/or other's property.

34. Attempts to draw attention to himself when teacher pays attention to other children.

35. Is overly sensitive; feelings easily hurt.

36. Is shy or bashful with most adults.

37. Often starts fights with other children (physical or verbal).

38. Disobeys directions or instructions of adult.

COMPETENCE SCALE

Child-Teacher

1. Child rebels physically, e.g., has temper tantrums, hits, kicks, etc.
2. Child frowns, shrugs shoulders, pouts or stamps foot when suggestion is made by teacher.
3. Child responds well only if the activity is planned or directed by the teacher.
4. Child accepts teacher's ideas and suggestions for play or ways of playing.
5. Child reacts negatively to teacher's ideas and suggestions for play activities.
6. Child dawdles when required to do something.
7. Child cooperates with rules and regulations.
8. Child hits teacher.
9. Child refuses to carry out reasonable suggestions from teacher even when having difficulty.
10. Child responds with immediate compliance to teacher's direction.
11. Child carries out requests and directions.
12. Child needs adult aid for each step of activity.
13. Child expresses open defiance against teacher's rules and regulations.
14. Child is independent of adult in planning his activities.
15. Child is independent of adult in overcoming difficulties with other children or activities.
16. Child is able to make his needs known to the teacher.
17. Child adds freely to suggestions made by the teacher.

Child-Child

18. Child is open to the ideas and suggestions of other children.
19. Child refuses to participate in activities with other children unless he can be the leader.
20. Child resists going along with the ideas of other children.

21. Child disrupts activities of others.

22. Child is fearful in approaching other children.

23. Child's ideas have little impact on many children in the classroom.

24. Child is at a loss without other children directing activities for him.

25. Child takes possession of another child's materials without permission.

26. Child is unwilling to play with other children except on his own terms.

27. Child is bossy and dominating with other children.

28. Child quarrels with other children.

29. Child gets others interested in what he is doing.

30. Child is hostile or aggressive with other children.

31. Child shies away and withdraws when approached by other children.

32. Child is bossed and dominated by other children.

33. Child has difficulty defending his own rights with other children.

34. Child attempts to gain cooperation from other children through threats.

35. Child prefers aggressive types of play.

Child Activities

36. Child acts silly at lunch time, e.g., giggles, shrieks, etc.

37. Child demonstrates little interest in things and activities.

38. Child manifests interest in many and varied types of things.

39. Child has difficulty in getting the attention of the group.

40. Child easily loses interest and flits from one activity to another.

41. Child is destructive with materials.

42. Child becomes disruptive when frustrated in an activity.

43. Child seems to be at a loss when first coming into the classroom in the morning.

44. Child prefers to play without any restrictions.

45. Child engages in activities in which there is a high probability of hurting himself.

46. Child resists making a change from one activity to a new activity.

47. Child gets into trouble in unstructured free-play types of activities.

48. Child puts things away carefully.

49. Child throws food and messes himself when eating.

50. Child has trouble keeping to the rules of the game.

51. Child seems eager to try new things.

52. Child spends time sitting around, looking around, or wandering around aimlessly.

53. Child is able to follow routines, e.g., putting on and taking off own sweater or jacket, washing hands.

54. Child participates in a half-hearted way.

Summary Items

55. Overall functioning: 1 = Good; 2 = Moderately good; 3 = Poor.

    1. Good or well functioning. Gets along well with teachers and other children; participates with interest in activities, accomplishes tasks usually mastered by children his age; alert, self-sufficient, friendly, and unafraid.

    2. Moderately well-functioning. Functions fairly adequately but shows some difficulty in one or several areas; growing up represents something of a struggle; not as happy as he might be.

    3. Poorly functioning. In comparison with other in the group presents problems and exhibits signs of disturbance, e.g., getting along with teachers and adults (over-demanding of the teacher's attention; or completely rejecting her); relating to other children (bossy and antagonistic, or very withdrawn and frightened); inability to sustain any prolonged interest.

56. Verbal fluency, ability in self-expression: 1 = Superior; 2 = Average; 3 = Poor; 4 = Minimal, or no speech.

57. Language used by child in class: 1 = English only; 2 = Primarily English with occasional use of a second language; 3 = Uses both languages equally; 4 = Primarily another language, only minimal English; 5 = Not appropriate. Child has no or only minimal speech of any kind.

UCLA EARLY CHILDHOOD RESEARCH CENTER
1970-1971

Name _____ Sex: M F 1 2 3 4

I.D. _____

Teacher _____

Examiner _____

Site _____

	Year	Month	Day
Date of Test:			
Date of Birth:			
Age:			
Age in Months:			

RECORD SHEET FOR BEHAVIOR CHECKLIST

	1 Not At All Typical	2 Somewhat Typical	3 Very Typical		1 Not At All Typical	2 Somewhat Typical	3 Very Typical
1				20			
2				21			
3				22			
4				23			
5				24			
6				25			
7				26			
8				27			
9				28			
10				29			
11				30			
12				31			
13				32			
14				33			
15				34			
16				35			
17				36			
18				37			
19				38			

Child's Name_____

RECORD SHEET FOR COMPETENCE SCALE

Item	Always 1	Often 2	Sometimes 3	Rarely 4	Never 5	Item	Always 1	Often 2	Sometimes 3	Rarely 4	Never 5	Item	Always 1	Often 2	Sometimes 3	Rarely 4	Never 5
1						19						37					
2						20						38					
3						21						39					
4						22						40					
5						23						41					
6						24						42					
7						25						43					
8						26						44					
9						27						45					
10						28						46					
11						29						47					
12						30						48					
13						31						49					
14						32						50					
15						33						51					
16						34						52					
17						35						53					
18						36						54					

Summary Items

	1	2	3	4	5
55. Overall Functioning	Good	Moderate	Poor		
56. Verbal Fluency	Superior	Average	Poor	Minimal	
57. Language Used	English Only	English + Other	Both Equally	Minimal English	No Speech

UCLA EARLY CHILDHOOD RESEARCH CENTER

1970-1971

Name _____ Sex: M F

I.D. _____

Teacher _____

Examiner _____

Site _____

	1 Year	2 Month	3 4 Day
Date of Test:			
Date of Birth:			
Age:			
Age in Months:			

1-11

BEHAVIOR CHECKLIST

1.	12	20.	31	1.	50	20.	69	39.	20
2.	13	21.	32	2.	51	21.	70	40.	21
3.	14	22.	33	3.	52	22.	71	41.	22
4.	15	23.	34	4.	53	23.	72	42.	23
5.	16	24.	35	5.	54	24.	73	43.	24
6.	17	25.	36	6.	55	25.	74	44.	25
7.	18	26.	37	7.	56	26.	75	45.	26
8.	19	27.	38	8.	57	27.	76	46.	27
9.	20	28.	39	9.	58	28.	77	47.	28
10.	21	29.	40	10.	59	29.	78	48.	29
11.	22	30.	41	11.	60	30.	79	49.	30
12.	23	31.	42	12.	61	31.	12	50.	31
13.	24	32.	43	13.	62	32.	13	51.	32
14.	25	33.	44	14.	63	33.	14	52.	33
15.	26	34.	45	15.	64	34.	15	53.	34
16.	27	35.	46	16.	65	35.	16	54.	35
17.	28	36.	47	17.	66	36.	17	55.	36
18.	29	37.	48	18.	67	37.	18	56.	37
19.	30	38.	49	19.	68	38.	19	57.	38

DAILY RECORD SHEET FOR THE COMPETENCE SCALE

CHILD-TEACHER

1				
2				
3				
4				
5				
6				
7				
8				
9				
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12				
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14				
15				
16				
17				

CHILD-CHILD

18				
19				
20				
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22				
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28				
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30				
31				
32				
33				
34				
35				

CHILD ACTIVITIES

36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
	Comments	Comments	Comments	Comments

Sept. 1970

DAILY RECORD SHEET FOR THE PROBLEM CHECKLIST

1					20				
2					21				
3					22				
4					23				
5					24				
6					25				
7					26				
8					27				
9					28				
10					29				
11					30				
12					31				
13					32				
14					33				
15					34				
16					35				
17					36				
18					37				
19					38				

Sept. 1970

SUMMARY DATA SHEET: PROBLEM CHECKLIST AND COMPETENCE SCALE

Child _____ ID _____ Site _____ 1 2 3 4 NT

Teacher _____ Observer _____

PROBLEM CHECKLIST F1	PROBLEM CHECKLIST F2	COMPETENCE SCALE F1	COMPETENCE SCALE F2*	COMPETENCE SCALE -F1/+F2
2	1	CT 12*	1	3
3	10	14	2	4
4	11	15	8	5*
5	12	16	9	6*
6	13	17	13	7
7	14			10*
8	17			11
9	18			
15	19	CC 22*	21	18
16	20	23*	25	19*
25	21	24*	26	20*
27	22	29	27	35*
28	23	31*	28	
29	24	32*	30	
30	26	33*	34	
31	33	39*		
32	34			
35	37	CA 37*	36	44*
36	38	38	40	45*
0		43*	41	46*
1		51	42	47*
2		52*	49	48
TOTAL SCORE		54*		50*
				53

SUMMARY ITEMS

55	
56	
57	

TOTAL NUMBER OF RATINGS EQUAL TO	F1	F2
0		
1		
2		
3		
4		
TOTAL		

TOTAL NUMBER OF:

	0	1	2	3	4	SUBTOTALS	F1	F2
CT F1						CT		
F2								
CC F1						CC		
F2								
CA F1						CA		
F2								

PROBLEM CHECKLIST F1	PROBLEM CHECKLIST F2	COMPETENCE SCALE F1	COMPETENCE SCALE F2*	COMPETENCE SCALE -F1/+F2
2	1	CT 12*	1	3
3	10	14	2	4
4	11	15	8	5*
5	12	16	9	6*
6	13	17	13	7
7	14			10*
8	17			11
9	18			
15	19	CC 22*	21	18
16	20	23*	25	19*
25	21	24*	26	20*
27	22	29	27	35*
28	23	31*	28	
29	24	32*	30	
30	26	33*	34	
31	33	39*		
32	34			
35	37	CA 37*	36	44*
36	38	38	40	45*
0		43*	41	46*
1		51	42	47*
2		52*	49	48
TOTAL SCORE		54*		50*
				53

SUMMARY ITEMS

55	
56	
57	

TOTAL NUMBER OF RATINGS EQUAL TO	F1	F2
0		
1		
2		
3		
4		
TOTAL		

TOTAL NUMBER OF:

	0	1	2	3	4	SUBTOTALS	F1	F2
CT F1						CT		
F2								
CC F1						CC		
F2								
CA F1						CA		
F2								

*Items for which High-Low Rating points must be reversed.

Appendix B

Table 1. Z Score Conversion Table for Behavior Checklist.

Table 2. Z Score Conversion Table for Competence Scale.

Table 3. Z Score Conversion Table for Total Factor 1 & 2.

Table 4. Ordered Means and Critical Value, with Matrixes of Differences Between Means and Studentized t-Statistics, for Newman-Keuls Post Hoc Test, Indicating Level of Significance of Differences Between Adjacent Groups.

Table 1. Z Score Conversion Table for Behavior Checklist.

Factor 1	Factor 2
Mean 5.55; S.D. 6.71	Mean 3.37; S.D. 5.00
Range of Raw Scores: 0–38	Range of Raw Scores: 0–38
Range of Z Scores: -.83–+4.84	Range of Z Scores: -.67–+6.93

Raw Score	Z Score F1	Z Score F2	Raw Score	Z Score F1	Z Score F2
0	-.83	-.67	20	2.15	3.33
1	-.68	-.47	21	2.30	3.53
2	-.53	-.27	22	2.45	3.73
3	-.38	-.07	23	2.60	3.93
4	-.23	.13	24	2.75	4.13
5	-.08	.33	25	2.90	4.33
6	.07	.53	26	3.05	4.53
7	.22	.73	27	3.20	4.73
8	.37	.93	28	3.35	4.93
9	.51	1.13	29	3.49	5.13
10	.66	1.33	30	3.64	5.33
11	.81	1.53	31	3.79	5.53
12	.96	1.73	32	3.94	5.73
13	1.11	1.93	33	4.09	5.93
14	1.26	2.13	34	4.24	6.13
15	1.41	2.33	35	4.39	6.33
16	1.56	2.53	36	4.54	6.53
17	1.71	2.73	37	4.69	6.73
18	1.86	2.93	38	4.84	6.93
19	2.00	3.13			

Table 2a. Z Score Conversion Table for Competence Scale. Factor 1

Mean 22.83
S.D. 13.42

Range of Raw Scores: 0-76
Range of Z Scores: -1.70 - +3.96

Raw Score	Z Score	Raw Score	Z Score	Raw Score	Z Score	Raw Score	Z Score
0	-1.70	20	- .21	40	1.28	60	2.77
1	-1.63	21	- .14	41	1.35	61	2.84
2	-1.55	22	- .06	42	1.43	62	2.92
3	-1.48	23	.01	43	1.50	63	2.99
4	-1.40	24	.09	44	1.58	64	3.07
5	-1.33	25	.16	45	1.65	65	3.14
6	-1.25	26	.24	46	1.73	66	3.22
7	-1.18	27	.31	47	1.80	67	3.29
8	-1.11	28	.39	48	1.86	68	3.37
9	-1.03	29	.46	49	1.95	69	3.44
10	- .96	30	.53	50	2.02	70	3.51
11	- .88	31	.61	51	2.10	71	3.59
12	- .81	32	.68	52	2.17	72	3.66
13	- .73	33	.76	53	2.25	73	3.74
14	- .66	34	.83	54	2.32	74	3.81
15	- .58	35	.91	55	2.40	75	3.89
16	- .51	36	.98	56	2.47	76	3.96
17	- .43	37	1.06	57	2.55		
18	- .36	38	1.13	58	2.62		
19	- .29	39	1.20	59	2.70		

Table 2b. Z Score Conversion Table for Competence Scale, Factor 2.

Mean 10.58
S.D. 10.20

Range of Raw Scores: 0-68
Range of Z Score: -1.04 - +5.63

Raw Score	Z Score	Raw Score	Z Score	Raw Score	Z Score	Raw Score	Z Score
0	-1.04	18	.73	36	2.49	54	4.26
1	- .94	19	.83	37	2.59	55	4.35
2	- .84	20	.92	38	2.69	56	4.45
3	- .74	21	1.02	39	2.79	57	4.55
4	- .65	22	1.12	40	2.88	58	4.65
5	- .55	23	1.22	41	2.98	59	4.75
6	- .45	24	1.32	42	3.08	60	4.85
7	- .35	25	1.41	43	3.18	61	4.94
8	- .25	26	1.51	44	3.28	62	5.04
9	- .15	27	1.61	45	3.37	63	5.14
10	- .06	28	1.71	46	3.47	64	5.24
11	.04	29	1.81	47	3.57	65	5.34
12	.14	30	1.90	48	3.67	66	5.43
13	.24	31	2.00	49	3.77	67	5.53
14	.34	32	2.10	50	3.86	68	5.63
15	.43	33	2.20	51	3.96		
16	.53	34	2.30	52	4.06		
17	.63	35	2.39	53	4.16		

Table 3a. Z Score Conversion Table for Total Factor 1.

Mean 28.38
S.D. 19.16

Range of Raw Scores: 0-114
Range of Z Scores: -1.48 - 4.47

Raw Score	Z Score	Raw Score	Z Score	Raw Score	Z Score	Raw Score	Z Score
0	-1.48	29	.03	58	1.55	87	3.06
1	-1.43	30	.08	59	1.60	88	3.11
2	-1.38	31	.14	60	1.65	89	3.16
3	-1.32	32	.19	61	1.70	90	3.22
4	-1.27	33	.24	62	1.75	91	3.27
5	-1.22	34	.29	63	1.81	92	3.32
6	-1.17	35	.35	64	1.86	93	3.37
7	-1.12	36	.40	65	1.91	94	3.42
8	-1.06	37	.45	66	1.96	95	3.48
9	-1.01	38	.50	67	2.02	96	3.53
10	- .96	39	.55	68	2.07	97	3.58
11	- .91	40	.61	69	2.12	98	3.63
12	- .85	41	.66	70	2.17	99	3.68
13	- .80	42	.71	71	2.22	100	3.74
14	- .75	43	.76	72	2.28	101	3.79
15	- .70	44	.82	73	2.33	102	3.84
16	- .65	45	.87	74	2.38	103	3.89
17	- .59	46	.92	75	2.43	104	3.95
18	- .54	47	.97	76	2.49	105	4.00
19	- .49	48	1.02	77	2.54	106	4.05
20	- .44	49	1.08	78	2.59	107	4.10
21	- .39	50	1.13	79	2.64	108	4.16
22	- .33	51	1.18	80	2.69	109	4.21
23	- .28	52	1.23	81	2.75	110	4.26
24	- .23	53	1.28	82	2.80	111	4.31
25	- .18	54	1.34	83	2.85	112	4.36
26	- .12	55	1.39	84	2.90	113	4.42
27	- .07	56	1.44	85	2.96	114	4.47
28	- .02	57	1.49	86	3.01		

Table 3b. Z Score Conversion Table for Total Factor 2.

Mean 13.94
S.D. 14.56

Range of Raw Scores: 0-106
Range of Z Scores: -96 - +6.32

Raw Score	Z Score	Raw Score	Z Score	Raw Score	Z Score	Raw Score	Z Score
0	-1.03	27	.90	54	2.75	81	4.61
1	- .96	28	.97	55	2.82	82	4.67
2	- .88	29	1.03	56	2.89	83	4.74
3	- .82	30	1.10	57	2.95	84	4.81
4	- .75	31	1.17	58	3.03	85	4.88
5	- .68	32	1.24	59	3.09	86	4.95
6	- .61	33	1.31	60	3.16	87	5.02
7	- .54	34	1.38	61	3.23	88	5.09
8	- .48	35	1.45	62	3.30	89	5.16
9	- .41	36	1.52	63	3.37	90	5.22
10	- .34	37	1.58	64	3.44	91	5.29
11	- .27	38	1.65	65	3.51	92	5.36
12	- .20	39	1.72	66	3.58	93	5.43
13	- .13	40	1.79	67	3.64	94	5.50
14	.00	41	1.86	68	3.71	95	5.57
15	.07	42	1.93	69	3.78	96	5.64
16	.14	43	2.00	70	3.85	97	5.70
17	.21	44	2.06	71	3.92	98	5.77
18	.28	45	2.13	72	3.99	99	5.84
19	.35	46	2.20	73	4.06	100	5.91
20	.42	47	2.27	74	4.12	101	5.98
21	.48	48	2.34	75	4.19	102	6.05
22	.55	49	2.41	76	4.26	103	6.12
23	.62	50	2.48	77	4.33	104	6.19
24	.69	51	2.54	78	4.40	105	6.25
25	.76	52	2.61	79	4.47	106	6.32
26	.83	53	2.68	80	4.54		

Table 4a. Ordered Means and Critical Values, with Matrixes of Differences between Means and Studentized t-Statistics, for Newman-Keuls Post Hoc Test, Indicating Level of Significance of Differences Between Adjacent Groups. Factor 1, Behavior Checklist.

	7	14	2	11	13	4	8	6	12	10	9	3	1	5
	-46.62	-24.24	-21.18	-14.78	-12.67	-6.89	-3.52	-3.40	2.20	17.74	33.56	42.75	49.32	49.73
		19.50												
	0.0	22.38	25.44	31.84	33.95	39.73	43.10	43.22	48.82	64.36	80.18	89.37	95.94	96.35
	0.0	0.0	3.06	9.46	11.57	17.35	20.72	20.84	26.44	41.98	57.80	66.99	73.56	73.97
	0.0	0.0	0.0	6.40	8.51	14.29	17.66	17.78	23.38	38.92	54.74	63.93	70.50	70.91
	0.0	0.0	0.0	0.0	2.11	7.89	11.26	11.38	16.98	32.52	48.34	57.53	64.10	64.51
	0.0	0.0	0.0	0.0	0.0	5.78	9.15	9.27	14.87	30.41	46.23	55.42	61.99	62.40
	0.0	0.0	0.0	0.0	0.0	0.0	3.37	3.49	9.09	24.63	40.45	49.64	56.21	56.62
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.12	5.72	21.26	37.08	46.27	52.84	53.25
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.60	21.14	36.96	46.15	52.72	53.13
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.54	31.36	40.55	47.12	47.53
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.82	25.01	31.58	31.99
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.19	15.76	16.17
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.57	6.98
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.41
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	1.15	1.30	1.63	1.74	2.04	2.21	2.22	2.50	3.30	4.11	4.59	4.92*	4.94*
2	0.0	0.0	0.16	0.49	0.59	0.89	1.06	1.07	1.36	2.15	2.96	3.44	3.77	3.79
3	0.0	0.0	0.0	0.33	0.44	0.73	0.91	0.91	1.20	2.00	2.81	3.28	3.62	3.64
4	0.0	0.0	0.0	0.0	0.11	0.40	0.58	0.58	0.87	1.67	2.48	2.95	3.29	3.31
5	0.0	0.0	0.0	0.0	0.0	0.30	0.47	0.48	0.76	1.56	2.37	2.84	3.18	3.20
6	0.0	0.0	0.0	0.0	0.0	0.0	0.17	0.18	0.47	1.26	2.07	2.55	2.88	2.90
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.29	1.09	1.90	2.37	2.71	2.73
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.29	1.08	1.90	2.37	2.70	2.72
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.80	1.61	2.08	2.42	2.44
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.81	1.28	1.62	1.64
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.47	0.81	0.83
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.34	0.36
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: All scores multiplied by 100 to increase precision of interpretation.

Table 4b. Ordered Means and Critical Value, with Matrixes of Differences Between Means and Studentized t-Statistics, for Newman-Keuls Post Hoc Test, Indicating Level of Significance of Differences Between Adjacent Groups. Factor 1, Competence Scale.

	8	7	6	2	11	10	12	5	3	9	4	13	14	1
	-28.34	-15.66	-10.72	3.02	7.78	11.83	15.65	26.73	42.55	45.60	47.75	50.42	51.28	61.50
		21.58												
	0.0	12.68	17.62	31.36	36.12	40.17	43.99	55.07	70.89	73.94	76.09	78.76	79.62	89.84
	0.0	0.0	4.94	18.68	23.44	27.49	31.31	42.39	58.21	61.26	63.41	66.08	66.94	77.16
	0.0	0.0	0.0	13.74	18.50	22.55	26.37	37.45	53.27	56.32	58.47	61.14	62.00	72.22
	0.0	0.0	0.0	0.0	4.76	8.81	12.63	23.71	39.53	42.58	44.73	47.40	48.26	58.48
	0.0	0.0	0.0	0.0	0.0	4.05	7.87	18.95	34.77	37.82	39.97	42.64	43.50	53.72
	0.0	0.0	0.0	0.0	0.0	0.0	3.82	14.90	30.72	33.77	35.92	38.59	39.45	49.67
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.08	26.90	29.95	32.10	34.77	35.63	45.85
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.82	18.87	21.02	23.69	24.55	34.77
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.05	5.20	7.87	8.73	18.95
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.15	4.82	5.68	15.90
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.67	3.53	13.75
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.86	11.08
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.22
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.59	0.82	1.45	1.67	1.86	2.04	2.55	3.28	3.43	3.53	3.65	3.69	4.16*
2	0.0	0.0	0.23	0.87	1.09	1.27	1.45	1.96	2.70	2.84	2.94	3.06	3.10	3.58
3	0.0	0.0	0.0	0.64	0.85	1.04	1.22	1.74	2.47	2.61	2.71	2.83	2.87	3.35
4	0.0	0.0	0.0	0.0	0.22	0.41	0.59	1.10	1.83	1.97	2.07	2.20	2.24	2.71
5	0.0	0.0	0.0	0.0	0.0	0.19	0.36	0.88	1.61	1.75	1.85	1.98	2.02	2.49
6	0.0	0.0	0.0	0.0	0.0	0.0	0.18	0.69	1.42	1.56	1.66	1.79	1.83	2.30
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.51	1.25	1.39	1.49	1.61	1.65	2.12
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.73	0.87	0.97	1.10	1.14	1.61
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.14	0.24	0.36	0.40	0.88
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.10	0.22	0.26	0.74
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.12	0.16	0.64
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.04	0.51
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.47
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: All scores multiplied by 100 to increase precision of interpretation.

Table 4c. Ordered Means and Critical Values, with Matrixes of Differences Between Means and Studentized t- Statistics, for Newman-Keuls Post Hoc Test, Indicating Level of Significance of Differences Between Adjacent Groups. Factor 2, Behavior Checklist.

6	12	11	10	7	13	3	2	8	14	9	1	5	4
-48.20	-46.40	-41.72	-36.30	-26.59	-23.86	-18.50	-17.21	-0.04	-0.03	0.04	4.64	38.20	58.00
	18.55												
0.0	1.80	6.48	11.90	19.61	24.34	29.70	30.99	48.16	48.17	48.24	52.84	86.40	106.20
0.0	0.0	4.68	10.10	17.81	22.54	27.90	29.19	46.36	46.37	46.44	51.04	84.60	104.40
0.0	0.0	0.0	5.42	13.13	17.86	23.22	24.51	41.68	41.69	41.76	46.36	79.92	99.72
0.0	0.0	0.0	0.0	7.71	12.44	17.80	19.09	36.26	36.27	36.34	40.94	74.50	94.30
0.0	0.0	0.0	0.0	0.0	4.73	10.09	11.38	28.55	28.56	28.63	33.23	66.79	86.59
0.0	0.0	0.0	0.0	0.0	0.0	5.36	6.65	23.82	23.83	23.90	28.50	62.06	81.86
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.29	18.46	18.47	18.54	23.14	56.70	76.50
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.17	17.18	17.25	21.85	55.41	75.21
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.08	4.68	38.24	58.04
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.07	4.67	38.23	58.03
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.60	38.16	57.96
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.56	53.36
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.80
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 0.0	0.10	0.35	0.64	1.06	1.31	1.60	1.67	2.60	2.60	2.60	2.85	4.66	5.73**
2 0.0	0.0	0.25	0.54	0.96	1.22	1.50	1.57	2.50	2.50	2.50	2.75	4.56	5.63**
3 0.0	0.0	0.0	0.29	0.71	0.96	1.25	1.32	2.25	2.25	2.25	2.50	4.31	5.38**
4 0.0	0.0	0.0	0.0	0.42	0.67	0.96	1.03	1.95	1.96	1.96	2.21	4.02	5.08*
5 0.0	0.0	0.0	0.0	0.0	0.25	0.54	0.61	1.54	1.54	1.54	1.79	3.60	4.67*
6 0.0	0.0	0.0	0.0	0.0	0.0	0.29	0.36	1.28	1.28	1.29	1.54	3.35	4.41*
7 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.07	1.00	1.00	1.00	1.25	3.06	4.12
8 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.93	0.93	0.93	1.18	2.99	4.05
9 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.25	2.06	3.13
10 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.25	2.06	3.13
11 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.25	2.06	3.12
12 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.81	2.88
13 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.07
14 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: All scores multiplied by 100 to increase precision of interpretation.

Table 4d. Ordered Means and Critical Values, with Matrixes of Differences Between Means and Studentized t-Statistics, for Newman-Keuls Post Hoc Test, Indicating Level of Significance of Differences Between Adjacent Groups. Factor 2, Competence Scale.

	6	7	11	3	2	8	12	10	1	14	13	9	5	4
	-93.72	-66.00	-55.56	-53.85	-53.64	-53.28	-52.50	-44.48	-38.07	-26.93	-6.95	-2.64	9.47	20.79
		17.90												
	0.0	27.72	38.16	39.87	40.08	40.44	41.22	49.24	55.65	66.79	86.77	91.08	103.19	114.51
	0.0	0.0	10.44	12.15	12.36	12.72	13.50	21.52	27.93	39.07	59.05	63.36	75.47	86.79
	0.0	0.0	0.0	1.71	1.92	2.28	3.06	11.08	17.49	28.63	48.61	52.92	65.03	76.35
	0.0	0.0	0.0	0.0	0.21	0.57	1.35	9.37	15.78	26.92	46.90	51.21	63.32	74.64
	0.0	0.0	0.0	0.0	0.0	0.36	1.14	9.16	15.57	26.71	46.69	51.00	63.11	74.43
	0.0	0.0	0.0	0.0	0.0	0.0	0.78	8.80	15.21	26.35	46.33	50.64	62.75	74.07
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.02	14.43	25.57	45.55	49.86	61.97	73.29
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.41	17.55	37.53	41.84	53.95	65.27
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.14	31.12	35.43	47.54	58.86
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.98	24.29	36.40	47.72
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.31	16.42	27.74
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.11	23.43
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.32
1	0.0	1.55	2.13	2.23	2.24	2.26	2.30	2.75	3.11	3.73	4.85*	5.09*	5.76**	6.40**
2	0.0	0.0	0.58	0.68	0.69	0.71	0.75	1.20	1.56	2.18	3.30	3.54	4.22	4.85*
3	0.0	0.0	0.0	0.10	0.11	0.13	0.17	0.62	0.98	1.60	2.72	2.96	3.63	4.27
4	0.0	0.0	0.0	0.0	0.01	0.03	0.08	0.52	0.88	1.50	2.62	2.86	3.54	4.17
5	0.0	0.0	0.0	0.0	0.0	0.02	0.06	0.51	0.87	1.49	2.61	2.85	3.53	4.16
6	0.0	0.0	0.0	0.0	0.0	0.0	0.04	0.49	0.85	1.47	2.59	2.83	3.51	4.14
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.45	0.81	1.43	2.54	2.79	3.46	4.09
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.36	0.98	2.10	2.34	3.01	3.65
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.62	1.74	1.98	2.66	3.29
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.12	1.36	2.03	2.67
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.24	0.92	1.55
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.68	1.31
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.63
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: All scores multiplied by 100 to increase precision of interpretation.

Table 4e. Ordered Means and Critical Values, with Matrixes of Differences Between Means and Studentized t-Statistics, for Newman-Keuls Post Hoc Test, Indicating Level of Significance of Differences Between Adjacent Groups. Factor 2, Total.

	6	12	11	7	10	4	3	2	8	1	13	14	9	5
	141.44	-98.40	-96.76	-93.96	-80.35	-78.93	-71.95	-70.38	-52.96	-3[illegible].00	-30.52	-25.66	48.03	78.93
		34.80												
	0.0	42.84	44.48	47.28	60.89	62.31	69.29	70.86	88.28	108.24	110.72	114.58	189.27	220.17
	0.0	0.0	1.64	4.44	18.05	19.47	26.45	28.02	45.44	65.40	67.88	71.74	146.43	177.33
	0.0	0.0	0.0	2.80	16.41	17.83	24.81	26.38	43.80	63.76	66.24	70.10	144.79	175.69
	0.0	0.0	0.0	0.0	13.61	15.03	22.01	23.58	41.00	60.96	63.44	67.30	141.99	172.89
	0.0	0.0	0.0	0.0	0.0	1.42	8.40	9.97	27.39	47.35	49.83	53.69	126.38	159.28
	0.0	0.0	0.0	0.0	0.0	0.0	6.98	8.55	25.97	45.93	48.41	52.27	126.96	157.86
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.57	18.99	38.95	41.43	45.29	119.98	150.88
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.42	37.38	39.86	43.72	118.41	149.31
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.96	22.44	26.30	100.99	131.89
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.48	6.34	81.03	111.93
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.86	78.55	109.45
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	74.69	105.59
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.90
1	0.0	1.23	1.28	1.36	1.75	1.79	1.99	2.04	2.54	3.11	3.18	3.29	5.44	6.33
2	0.0	0.0	0.05	0.13	0.52	0.56	0.76	0.81	1.31	1.88	1.95	2.06	4.21	5.10*
3	0.0	0.0	0.0	0.08	0.47	0.51	0.71	0.76	1.26	1.83	1.90	2.01	4.16	5.05*
4	0.0	0.0	0.0	0.0	0.39	0.43	0.63	0.68	1.18	1.75	1.82	1.93	4.08	4.97*
5	0.0	0.0	0.0	0.0	0.0	0.04	0.24	0.29	0.79	1.36	1.43	1.54	3.69	4.58*
6	0.0	0.0	0.0	0.0	0.0	0.0	0.20	0.25	0.75	1.32	1.39	1.50	3.65	4.54*
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.55	1.12	1.19	1.30	3.45	4.34*
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.50	1.07	1.15	1.26	3.40	4.29*
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.57	0.64	0.76	2.90	3.79
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.07	0.18	2.33	3.22
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.11	2.26	3.15
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.15	3.04
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.89
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: All scores multiplied by 100 to increase precision of interpretation.